

In the Lepidoptera, the British Isles have 657 genera and 2,187 species; New York has 800 genera and 2,439 species. With the number of species not far from equal, the smaller number of British genera appears characteristic of an island fauna, where additional generic types have not arrived in great numbers, while those already present had the opportunity to expand. The Hawaiian fauna illustrates this in a striking manner. But whereas the numerous species in the Hawaiian Islands are endemic, those of the British Islands are, with few exceptions, common to the continent of Europe or only racially distinct. It must be supposed that the peculiar genera of the countries to the south could not easily establish themselves in the British Islands, or perhaps there has been a greater tendency to divide genera in America.

On comparing particular groups, the differences are striking. The British Islands have only one species of Saturniidæ; New York has eight in seven genera, but one genus and species is introduced. In the butterflies, which are well known in both regions, New York has about 114. The British Islands have 68. Britain has only one *Papilio*; New York has seven swallow-tails, arranged in three genera. *Parnassius*, though a circumpolar genus, is absent from both lists. In the Hymenopterous family Mutillidæ, the British Islands have only two species; New York has 23. In the ants, the British Islands have 36; New York has 63 species, and many subspecies.

### BOOK NOTICE

*Insect Microbiology—An Account of the Microbes Associated with Insects and Ticks with Special Reference to the Biologic Relationships Involved.* By Edward A. Steinhaus. Ithaca, New York. Comstock Publishing Company, Inc., 1946.  $9\frac{1}{2} \times 6\frac{1}{4}$  in. XIV + 763 p. 250 figs. \$7.75

I have been waiting for this book for many years, particularly within recent ones because of the presence of a protozoan in *Macrocentrus ancyliworis* and in its host, the potato tuber worm which interfered seriously with the production of *M. ancyliworis* for liberation in peach orchards infested with the Oriental fruit moth. What I needed was an adequate and general consideration of the entire field of insect microbiology, which could be

used as a basis for more intensive work with particular organisms and which introduced one to the literature of the subject. The present work supplies these needs completely. As a group entomologists have paid little attention to insect microbiology, due probably to the specialization required in bacteriology, mycology, protozoology, etc. However, over the years, various studies and observations have been made and the author has organized this information and presented it as a reference work and textbook. This is the first time this has been done and the student now has basic information that should stimulate more research in a field that has been greatly neglected in favor of "practical" studies. Professor Steinhaus' book has been greatly needed for a long time.

There is a chapter on extracellular bacteria and insects; a long chapter on specific bacteria associated with insects, which is really an annotated and systematic catalogue of great value to investigators; a chapter on intracellular bacterium-like and rickettsia-like symbiotes, which live in tissue cells and usually are not harmful to them; and remaining chapters, on Rickettsiæ, yeast and insects, fungi and insects, viruses and insects, spirochetes associated with insects, protozoa and insects, protozoa in termites, immunity in insects which is practically a new field, and methods and procedures. The references number 1,739 of which 577 are in foreign languages. Author and subject indexes conclude the volume.

Professor Steinhaus covers the relationships and associations between microbes and insects wherever these are known, although the gaps in our knowledge are enormous, and his book is a stimulating approach to a subject that will be new to many entomologists and of practical interest to many in the field of biological control where frequently the production of parasitic species falls off due to the presence of microorganisms that sometimes cause no end of trouble. The author has made a notable contribution in a field that should be cultivated for the sake of the basic knowledge that will result.

The future of insect microbiology is not so much in the hands of entomologists as it is in the hands of the entomicrobiologists and these in turn are in the hands of our colleges and universities.  
—H. B. WEISS.